

ABSTRACT OF

An ADDRESS

ON

THE PRESENT TREATMENT OF INOPERABLE CANCER.

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BY ALFRED COOPER, F.R.C.S. ENG.,
PRESIDENT OF THE SOCIETY.

GENTLEMEN,—The honour which you have done me by electing me as your president is one of the greatest honours which I have yet received, for, although the West London Medico-Chirurgical Society is young in years, it is, I believe, by far the most active in its work and growth of all the other medical societies in London. On taking the chair for the first time I have thought that I cannot do better than draw your attention to a consideration of the present treatment of inoperable cancer, a disease which has attacked the highest in the land and which is certainly becoming more prevalent.

It is unnecessary for me as a surgeon to state that in cases where the disease together with the enlarged lymphatic glands are in such a position that their removal can be effected without too great a risk to life, this should be done thoroughly and at once, and that no valuable time should be wasted in trying any suggested cancer cures. It is in the cases of so-called inoperable disease that it is not only justifiable but also wise to try these new remedies, since a patient with recurrent cancer will be only too glad to run any risk or to undergo any discomfort which gives the slightest chance of relief. During the last decade attention has been drawn by several distinguished surgeons to a number of methods of treatment as follows, and I will briefly give you the information which I have been able to collect on the subject : (1) inoculation with the streptococcus of erysipelas ; (2) subcutaneous injection of Coley's fluid ; (3) subcutaneous injection of anti-cancerous serum ; (4) oöphorectomy ; (5) thyroid feeding ; (6) lymph gland extract ; (7) treatment by Roentgen rays and by Finsen's light ; (8) injection of various irritating substances and the production of aseptic suppuration ; (9) electricity ; and (10) drugs. When considering what benefit has been derived from any particular method of treatment, it must, however, be borne in mind that different forms of malignant disease behave in a manner peculiar to each growth, and that some of the atrophic forms of cancer of the breast have been known to diminish and even to disappear spontaneously.

INOCULATION WITH THE STREPTOCOCCUS OF ERYSIPELAS.

Nearly 200 years ago it was observed that a certain number of malignant growths disappeared after an attack of erysipelas, and attention has recently been drawn to the subject by Fehliesen and Billroth, who have reported cases of inoperable sarcoma cured by an attack of erysipelas. After the discovery of the streptococcus Fehliesen suggested that an inoculation of a cultivation of the organism might be used to produce a like result ; he succeeded five times in producing erysipelas by inoculations of pure cultures of streptococcus in patients suffering from malignant tumour. He obtained a cure in a case of cancer of the breast, and in four other cases there was temporary atrophy of the tumour.

SUBCUTANEOUS INJECTION OF COLEY'S FLUID.

No satisfactory fluid was, however, obtained until Coley of New York introduced the use of the mixed toxins of the streptococcus of erysipelas and the bacillus prodigiosus.

The preparation of the fluid was based on the discovery of Professor Roger of Paris, who found that the addition of a non-pathogenic micro-organism—the bacillus prodigiosus—to cultures of certain pathogenic micro-organisms, greatly enhanced the virulence of the latter, and among these organisms was the streptococcus of erysipelas. At first Coley mixed together the most virulent streptococcus cultures obtainable with that of the bacillus prodigiosus in the proportion of four of the former to one of the latter, sterilising the mixture by filtration, and preserving it by the addition of a little thymol. He now, however, makes the fluid by inoculating peptonised bouillon from the colonies obtained by passing the micro-organism of a fatal case of erysipelas through a rabbit's ear. The growth of the germ is then carried on for three weeks at a temperature of from 30° to 35° C., after which the flask is inoculated with the bacillus prodigiosus. The fluid is then exposed to a room temperature for 10 days, when, after being thoroughly shaken, the cultures are transferred to small sterilised glass-stoppered bottles, and sterilisation is ensured by exposing these to a temperature of 60° C. for an hour. The injections are made into the substance of the tumour itself, and the rule is to begin with a minimum dose and slowly to increase each day until the desired action is obtained. Toxins produced from very virulent cultures, mixed and unfiltered, should never be given in larger initial doses than half a minim, boiled water being added to obtain dilution. Each day the dose should be increased by half a minim until the reaction temperature reaches 102° or 103° F. The amount required to produce a feeling of chill, and a temperature of 102°, varies with the individual case, but one or two minims will generally be sufficient. The effects of the injection are rather unpleasant, nausea and vomiting frequently occurring after severe reactions, and after slight reactions, headache, muscular pains, especially in the back, and a feeling of general malaise. If no beneficial results are apparent after three weeks' treatment Coley believes that it is useless to continue the injections, since in nearly all of his successful cases marked improvement was seen within a week of the first injection. When apparent benefit results from the treatment and there is no contrary indication to its continuance it may be kept up for four months, with occasional intervals of rest. Coley has used the fluid in 148 cases, and out of these 24, or 15 per cent., improved. Six of these cases afterwards recurred, but the remaining 12 per cent. were permanent successes, some of the cases having remained well for six years. Coley has also collected 35 cases treated by other surgeons ; out of these cases in 26 the tumour disappeared completely. Most of these cases had been diagnosed as sarcoma by both clinical and microscopic examination. Two cases were reported by Moullin in which death occurred in consequence of the injections. In the first case the patient was a man of about 70 years of age with a large vascular tumour of the femur ; the other died from pyæmia. It was found that the greatest chance of improvement was in spindle-celled or mixed-celled sarcoma. Coley himself considers the results in carcinoma to be unsatisfactory

SUBCUTANEOUS INJECTION OF ANTI-CANCEROUS SERUM.

Last year Vlaieff introduced in Paris a method of treatment of advanced malignant disease by inoculation with a special anti-cancerous serum. He stated that he obtained from malignant tumours certain parasitic cells, called blastomycetes, which had the power of producing abdominal cancer in guinea-pigs when inoculated into the peritoneum. Having done this he endeavoured to immunise several different animals, but he only succeeded in getting an active serum from pigeons, fowls, and geese. This latter serum inoculated into rats prevented the development of cancer after subsequent inoculations with the blastomycetes. In man he inoculates 10 cubic centimetres of serum obtained from geese, and the dose, though considered free from any danger, produces a considerable local and general reaction. Vlaieff states that he has treated 60 cases of human carcinoma by this method. When it was administered early, before ulceration and glandular enlargement, the serum was capable of exercising a curative effect.

OÖPHORECTOMY.

The treatment of inoperable cancer of the breast by oöphorectomy is one of the most interesting subjects brought forward during the last few years. Much of our knowledge of the subject we owe to Mr. Stanley Boyd, from whose paper in the *British Medical Journal* I have freely drawn in

the following remarks. The first operation of the kind was performed by Dr. G. T. Beatson, of Glasgow, in 1896, and, although the patient was suffering from a large recurrent and inoperable growth of the breast, eight months after the operation all trace of the disease had gone. She died, however, from a recurrence nearly four years later. According to Mr. Boyd, Dr. Beatson was led to consider that oöphorectomy would be useful in treatment of inoperable cancer of the breast by the following consideration : " In lactation there is rapid multiplication of mammary epithelium ; the cells undergo fatty degeneration as fast as they are formed, break down, fall into the lumina of the gland acini, and come away in the milk. Beatson learnt that certain farmers spayed lactating cows in order to maintain permanently or for a long time the above state of matters, resulting in the secretion of milk. In cancer also the mammary epithelium multiplies rapidly, but, instead of undergoing fatty degeneration and being cast off, it distends the acini, penetrates into the lymph spaces of the breast, and there, floating in a nutrient fluid, it continues multiplying and forcing its way onwards towards the lymphatic glands. As oöphorectomy in the cow maintains fatty degeneration of the epithelium of the lactating breast, Beatson thought that it might induce fatty degeneration of the epithelium of the cancerous breast. Accepting menstruation as the evidence of ovarian activity, Beatson was inclined to believe that the cessation of lactation was due to the re-establishment of the influence of the ovaries, which influence had been suspended by the gravid uterus, and thus removal of the ovaries resulted in the indefinite continuance of lactation. It further occurred to him as possible that cancer of the mamma might actually be due to some ' ovarian irritation ' or to ' some defective steps in the cycle of ovarian changes, ' and that removal of the ovaries might bring cancerous cell-proliferation to a standstill or induce fatty degeneration of the cells as seen in lactation. " About the same time that Dr. Beatson reported his first case, Mr. Pearce Gould showed a woman who, six months before, had been apparently moribund with secondary cancer in the breast, in the supra-clavicular glands, in the right lung, and in the femur, and in whom without any treatment the cancer began to disappear, the menopause having occurred a year previously. Three years later she was in good health and free from disease. Mr. Boyd last year collected 54 cases of oöphorectomy for cancer, which were in no way selected cases, but included the whole experience of several surgeons. As a conclusion, he considers that on an average life was prolonged six months by the operation. Out of the 54 cases, 19, or 35 per cent., were more or less markedly benefited by the operation, and only one died. Mr. Boyd thinks that oöphorectomy should be offered in all cases, other than the very acute, of inoperable mammary cancer in women over 40 years with no visceral or bony lesions, and before the menopause. Cancer in other parts of the body, even in the uterus, is quite unaffected by oöphorectomy.

THYROID FEEDING.

The treatment of inoperable cancer by thyroid feeding is also due to Dr. Beatson, who considers that the so-called cancer bodies are not parasites but are cells undergoing mucoid degeneration, and he therefore thought that a free administration of thyroid extract might influence them greatly and in time effect a cure. Dr. Beatson employed the treatment in three cases ; but in two of these it was associated with oöphorectomy, so that the improvement noticed was probably due to that cause ; in the only case in which thyroid extract alone was given no improvement followed. Soon after this Dr. Frederick Page of Newcastle reported the case of a woman from whom he had removed a tumour of the breast and who within a few months developed a large and inoperable recurrence. Thyroid feeding was commenced with three-grain doses, and this was increased till 15 grains of the extract were given thrice daily, and at the end of 18 months the tumour had disappeared. It is interesting to observe that a fresh nodule of recurrent growth appeared during treatment. A further report of the case states that six months later the growth had commenced to increase and was quite unaffected by thyroid feeding. Another physician, Dr. R. Bell of Glasgow, was favourably impressed with the use of thyroid feeding and tried it in two cases of epithelioma of the cervix, and states that he obtained satisfactory results. Mr. H. T. Butlin, on the other hand, tried it in a good many cases, but has not obtained even temporary benefit in a single case. It should be noted that the favourable cases have been carcinoma of the breast, and there is no evidence

that the treatment can be of any service in carcinoma of other parts.

LYMPH GLAND EXTRACT.

Somewhat analogous to thyroid feeding is the treatment by means of freshly-prepared lymph gland extract which has been recommended by Dr. H. Snow. Four grains of the extract are given in capsules, one being taken after each meal. Dr. Snow states that he has used this treatment in several cases of mammary cancer and that it resulted in considerable improvement.

TREATMENT BY ROENTGEN RAYS AND BY FINSSEN'S LIGHT.

Several cases of rodent ulcer have been treated in the West London Hospital by means of exposure to x rays. Although they can scarcely be classified under the heading of inoperable cancer, still they have a distinct bearing on the subject. In applying the treatment the surrounding parts of the face, especially the eyes, are protected by means of a lead mask and a vacuum tube connected with a coil giving a 10-inch or a 12-inch spark is used. The vacuum tube is placed about five inches from the ulcer and an exposure is given daily for from 10 to 15 minutes. The ulcer is usually healed after about a month or six weeks. A few months ago Mr. Andrew Clark recorded a case of chronic cancer of the breast which was treated by x rays. The patient was a woman, aged 60 years, who had noticed a lump in the breast for nearly seven years. She had declined operative treatment and the lump had grown and ulcerated till the whole breast was replaced by a large ulcer. There were enlarged glands in the axilla. The x rays were applied five days a week for 15 minutes each day and at the end of two months the general condition had improved, the pain had lessened, the ulcer had cleaned and become smaller, and the axillary glands were getting less. This, as far as I can find, is the only case of cancer of the breast treated by the x rays, and it must be noted that it was of a very chronic type, its behaviour being more like a rodent ulcer than a scirrhus. The action of the x rays is almost similar to that of Finsen's light treatment, and several cases of rodent ulcer have been treated by that method ; the treatment, however, is more painful than that by the x rays, and does not possess any advantages. Too few cases have been treated by either method to form any definite conclusion.

INJECTIONS OF VARIOUS IRRITATING SUBSTANCES.

Under this heading are included a number of rather diverse methods, the action of most of which is to excite inflammation in the tumour. Among these are (1) the parenchymatous injection of acetic acid ; (2) the parenchymatous injection of alcohol ; (3) the parenchymatous injection of methyl violet ; (4) the parenchymatous injection of the venom of the cobra di capello ; and (5) artificially produced suppuration, either (a) by oil of turpentine, (b) by arsenious acid, or (c) by calcium carbide.

Parenchymatous injection of acetic acid.—More than 30 years ago, in 1866, my attention was drawn by Sir William (then Dr.) Broadbent to the method of treating inoperable cancer by the parenchymatous injection of acetic acid. The injection must be made slowly, and Sir William Broadbent lays stress on a large quantity of a weak solution, as much as 80 minims, being preferable to a smaller quantity of a strong one. He employed the strong acetic acid of the British Pharmacopœia, diluted with three or four parts of water. A great number of injections have to be made and in some cases they were repeated daily. It was not claimed for this method that it was curative, but that it prolonged life and rendered the patient's suffering less severe. Sir William Broadbent treated some cases of recurrent cancer of the breast with very satisfactory results, the tumour being cast off in large fragments and the enlargement of the axillary glands subsiding. He also treated a case of cancer of the rectum producing obstruction of the bowel, in which the growth was much reduced in size and the obstruction relieved. About the same time, too, at his suggestion, I treated a case of cancer of the rectum. The patient died from exhaustion some little time afterwards and at the necropsy it was found that the tumour of the rectum had entirely disappeared, but that the liver and other abdominal organs were extensively affected by cancer. I also used this method in the case of a labourer who was sent to me from the country suffering from a large epithelioma on the back of one hand. I injected acetic acid (1 in 7) into the growth and repeated the injection once a week for six months. The growth entirely disappeared

under treatment and the patient was so pleased with the result that he indulged in several drinking bouts ; unfortunately one of them took place on the day on which I had arranged to show him at the Medical Society of London and on his way to the railway station he fell into a pond and was drowned. The friends refused to let me have the hand.

Parenchymatous injection of alcohol.—This was first advocated by Schwalbe and Hasse in 1872. The latter surgeon has treated 20 cases of cancer by this method but has had only one successful case, a naso-pharyngeal cancer, and even in this case a large gland was left. According to another observer 15 cases of cancer of the breast out of 18 were cured. A 30 per cent. solution of alcohol was used at first, the strength being gradually increased to 40 or 50 per cent. The amount used in each injection varied from two to 10 cubic centimetres, and an injection was made every third or fourth day.

Parenchymatous injection of methyl violet.—Von Maestig Moorhof introduced the treatment of inoperable cancer by injections into the substance of the tumour of a solution of methyl violet. Watery solution (1 in 500) was used, and from three to six grammes of this were injected at short intervals. In several cases considerable shrinkage of the growth occurred. This treatment has been tried in the West London Hospital without producing any benefit. It is not so painful as the injection of alcohol. I have been unable to find any evidence of a cure following the treatment.

Parenchymatous injection of the venom of the cobra di capello.—The dry venom of the cobra di capello was employed by Répin in doses of one-fortieth of a milligramme, injected hypodermically. This dose was gradually increased to seven milligrammes. This patient's weight increased, but there was no alteration in the tumour, the injections producing painful sensations similar to those following the streptococcus toxin. It is not likely that any further experiments will be made with this remedy, as it is both painful and dangerous.

Artificially produced suppuration, either (a) by oil of turpentine, (b) by arsenious acid, or (c) by calcium carbide.—Crynski treated some cases of advanced carcinoma by producing suppuration of an aseptic character. He employed injection of oil of turpentine, and although much necrotic tissue was thrown off and suppuration was well established the advance of the disease was in no way checked. The injections, too, inflicted considerable suffering on the patient. On the other hand, Wurth records a case of sarcoma of the abdominal wall treated by injections of arsenious acid into isolated areas of the growth. After a short time profuse suppuration occurred and the treatment was abandoned. The suppuration continued for several weeks, when it gradually ceased and the tumour disappeared. Up to ten years afterwards there was no recurrence. Carbide of calcium in the presence of water produces acetylene gas, and Etheridge of Chicago has employed it in cases of carcinoma of the uterus in the following manner. The organ is first thoroughly curetted, the hæmorrhage being checked by the actual cautery. After being made as dry as possible a piece of calcium carbide of the size of the thumb is placed in the cavity of the uterus, which is then firmly packed by iodoform gauze. Acetylene gas is at once evolved, which produces a large amount of froth. The patient is kept in bed for three days, when the dressing is removed and a fresh piece of calcium carbide is inserted. After a series of such applications a clean, simple ulcer remains. In two cases a cure was obtained by this method, but at present its application has been too limited to warrant any opinion being formed of its value.

ELECTRICITY.

There are several different methods in which electricity can be employed in the treatment of cancer. Inglis Parsons has treated several by means of currents having a high electro-motive force, the current being flashed instantaneously a number of times through the tumour. The patient is anæsthetised and insulated needles are placed into the tumour some inches apart. The current is obtained from 70 cells and has an electro-motive force of 105 volts. He commences with a current of 10 milliampères and increases it to as much as 600 milliampères, the application being instantaneous and being repeated about 50 times. Although some of Dr. Parsons's cases improved they were, however, of the class which could have been treated quicker and more certainly by operation, and one patient at least died from the shock of the use of too strong a current.

Reading of Philadelphia has reported three cases of advanced cancer successfully treated by frequent and long-continued electric punctures, a current of from 15 to 20 milliampères being used for about 10 minutes at each application. The disadvantages of this treatment are the pain and the duration. The term "kataphoresis" has been applied to the treatment by means of a strong current, in which a zinc electrode heavily coated with mercury is placed in the tumour while the negative pole is connected with another part of the body. Massey employed this treatment and believes that the oxychloride of mercury has a selective action on cancer cells. He found cocaine anæsthesia sufficient to allay the pain, so long as the current was not stronger than 150 milliampères, but as in other cases he uses currents of 500 milliampères he recommends general anæsthesia. In eight cases treated by this method improvement was seen in all. The objection to the method is the necessity for frequent and long-continued treatment and its uselessness where the lymphatic glands are involved.

DRUGS.

Chelidonium majus (celandine) enjoys a great reputation in the East Indies for the treatment of cancer, and was first recommended in Europe 30 years ago. Attention has recently been drawn to it by the publications of Dennisio and other Russian physicians, and an excellent *résumé* of the work of these physicians appears in an article in the *Therapeutic Gazette* by Spirak. Dennisio gives half a grain of the extract in peppermint water, increasing the dose to five grains in the 24 hours. If given hypodermically, the extract is diluted with distilled water, and one cubic centimetre is injected not oftener than once a week. Spirak has collected 61 cases treated by 14 different surgeons in this way ; of these 33 showed improvement and 27 did not. Great benefit follows the exhibition of large and increasing doses of morphia in hopeless cases. The drug should be pushed without any scruple, and it is quite immaterial how large an amount is taken at the end ; it is quite common to give several grains of morphia each day.

As a result of this review of the different remedies which have been recommended we may, I think, arrive at the following conclusions :—

1. That in cases of inoperable sarcoma, more especially the spindle-cell variety, the patient should have the option of Coley's fluid given to him, since a certain number of cases have been cured.

2. That in cases of inoperable cancer of the breast in women of about 40 years of age in whom the menopause has not occurred the operation of oöphorectomy should be proposed, and this treatment may be combined with thyroid feeding.

3. That in cases of inoperable rodent ulcer and in the superficial malignant ulceration in other parts the Roentgen rays give a good hope of improvement.

4. That in cases where these other methods are declined or are inapplicable the internal administration of celandine is worthy of trial, and when the case appears quite hopeless morphia should be pushed without hesitation.

5. Finally, I would suggest that before trying any of these remedies the risk should be fully pointed out to the patient, that the faint hope that most of them afford should not be magnified, and that the discomfort of treatment should be fully discussed ; in fact, the surgeon should not do more than offer the treatment and leave the person to accept or receive it.

In conclusion, I should like to express my thanks to my friend Mr. L. A. Bidwell for the able assistance he has given me in investigating this subject. I have also to express the sense of loss which the society has suffered in the removal by death of Dr. J. L. W. Thudichum. Dr. Thudichum was one of our earliest Presidents, and had always taken the very deepest interest in the society's welfare. His geniality and consideration for others endeared him to everyone who knew him, and his enthusiasm and deep store of knowledge made him respected by all.